

## CLAIM AMENDMENTS

1           1. (original) A method for producing a conductive and  
2         transparent zinc oxide layer on a substrate by reactive sputtering,  
3         the process having a hysteresis region, characterized by the  
4         following steps:

5                 a metallic Zn target with doping is used, the doping  
6         content of the target being less than 2.3 at-%,

7                 the heater for the substrate is set such that a substrate  
8         temperature of greater than 200 °C is set,

9                 a dynamic deposition rate of greater than 50 nm\*m/min is  
10         set that corresponds to a static deposition rate of more than 190  
11         nm/min, and

12                 a stabilized operating point within the unstable process  
13         region is selected that is located between the transition point  
14         between a stable, metal process and an unstable process and the  
15         inflection point of the stabilized process curve.

1           2. (original) The method according claim 1 wherein a  
2         target with a doping content of less than 1.5 at-%, particularly of  
3         less than 1 at-% is used.

1           3. (currently amended) The method according to any one  
2         of claims claim 1 [[to 2]] wherein a target with aluminum as the  
3         doping agent is used.

1           4. (currently amended) The method according to ~~any one~~  
2 ~~of claims~~ claim 1 [[to 3]] wherein the substrate is heated to  
3 temperatures above 250 °C, particularly to temperatures above 300  
4 °C.

1           5. (currently amended) The method according to ~~any one~~  
2 ~~of claims~~ claim 1 [[to 4]] wherein a dynamic deposition rate of  
3 greater than 80 nm\*m/min, particularly of greater than 100 nm/min  
4 is set that corresponds to a static deposition rate of greater than  
5 300, particularly greater than 380 nm/min.

1           6. (currently amended) The method according to ~~any one~~  
2 ~~of claims~~ claim 1 [[to 5]] wherein a dual magnetron arrangement  
3 with medium frequency (mf) excitation is used.

1           7. (currently amended) The method according to ~~any one~~  
2 ~~of claims~~ claim 1 [[to 6]] wherein a dynamic flow process is  
3 carried out, where the substrate is moved during sputtering.

1           8. (currently amended) A conductive and transparent  
2 zinc oxide layer, produced with the method according to ~~any one of~~  
3 ~~claims~~ claim 1 [[to 7]], characterized in that the content of  
4 doping agent, particularly of aluminum, in the produced oxide layer  
5 is less than 3.5 at-%, that the resistivity is less than  $1 \times 10^{-3}$  W

6       cm, that the charge carrier mobility is greater than  $25 \text{ cm}^2/\text{V s}$  and  
7       that the averaged transmittance of 400 to 1100 nm is greater than  
8       80%.

1           9. (original) The oxide layer according to claim 8  
2       wherein the content of doping agent is less than 3 at-%,  
3       particularly less than 2.5 at-%.

1           10. (currently amended) The oxide layer according to  
2       any one of claims claim 8 [[to 9]] wherein the resistivity is less  
3       than  $5 \times 10^{-2} \text{ W cm}$ .

1           11. (currently amended) The oxide layer according to  
2       any one of claims claim 8 [[to 10]] wherein the charge carrier  
3       mobility is greater than  $35 \text{ cm}^2/\text{V s}$ .

1           12. (currently amended) The oxide layer according to  
2       any one of claims claim 8 [[to 11]] wherein the averaged  
3       transmittance of 400 to 1100 nm is greater than 82%.

1           13. (currently amended) The oxide layer according to  
2       any one of claims claim 8 [[to 12]] wherein the layer comprises  
3       aluminum as the doping agent.

1           14. (currently amended) Use of an oxide layer according  
2       to any one of claims claim 8 [[to 13]] in a solar cell.

1           15. (original) The use according to claim 14 in a  
2       crystalline silicon thin-film solar array.

1           16. (original) The use according to claim 14 in an  
2       amorphous and crystalline silicon tandem solar array.